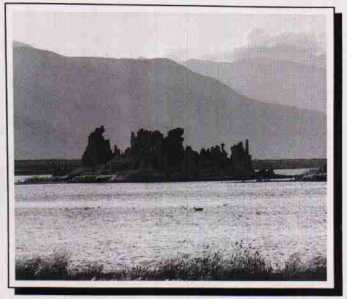


### California State Park Information

For information about State Park hours of operation, fees, annual passes or specific park regulations, contact your nearest State Park. Please check the front of your telephone directory under *State Government, Department of Parks and Recreation.*

For general state park information, contact the Public Information Unit at P.O. Box 942896, Sacramento, CA 94296-0001 or call (916)653-6995.

For camping reservations call DESTINET at (800)444-7275.

For a California State Park merchandise catalog or for a listing of all our publications and videos, write to California State Parks Store, P.O. Box 942896, Sacramento, CA 94296-0001 or call (916)653-4000.

Be sure to visit the State Parks Internet site at http://www.ceres.ca.gov/parks/

CALIFORNIA STATE PARKS
PETE WILSON
Governor

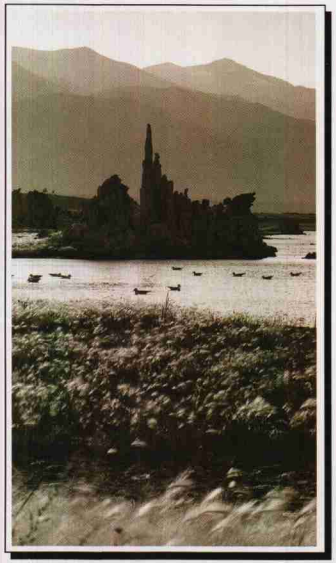
DOUGLAS P. WHEELER
Secretary for Resources

DONALD W. MURPHY
Director of Parks and Recreati
P.O. Box 942896
Sacramento, CA 94296-0001



# MONO LAKE TUFA
## State Reserve

# MONO BASIN
## National Forest
## Scenic Area



CALIFORNIA STATE PARKS

## Enjoying The Mono Basin

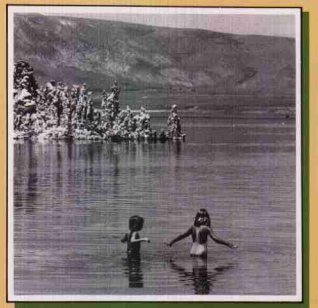
The Mono Basin Scenic Area Visitor Center is a great place to start your visit to this area. The center is located just off Highway 395, north of Lee Vining and includes a variety of exhibits about the natural and human history of the Mono Basin. Visitor center staffmembers stand ready to help you plan your explorations of Mono Lake and the Eastern Sierra.

After the visitor center, if you have time for only one stop, be sure to see the South Tufa Area. This easily accessible site offers spectacular views of the tufa towers, and a one-mile self-guided nature trail. Nearby, at Panum Crater, a trail leads to the dome and rim of the volcano. On the north shore, just below Mono Lake County Park, a boardwalk provides access across reserve marshlands to the shore of the lake–an excellent spot for birdwatching. The Visitor Center and South Tufa are fee areas.

Naturalists lead walks throughout the year at the South Tufa Area, and offer a variety of activities during the summer. Ask at the visitor center about scheduled walks, talks, evening programs and special children's activities.

A swim in Mono Lake is a memorable experience. The lake's salty water is denser than ocean water and provides a delightful buoyant swim. Keep the water out of your eyes or any cuts, as it will sting.

Boating provides a wonderful perspective on Mono Lake, but sudden high winds can make it dangerous to venture far from shore. Canoes and kayaks usually launch at Navy Beach, for parking access close to the water. Boats too large to carry may use a launch ramp near Lee Vining Creek. Ask at the visitor center for directions and safety tips.



There are no campgrounds in the scenic area or in the state reserve. Camping is permitted, however, throughout most of the scenic area above the old 1941 lakeshore (see map). Campfire permits are required and can be obtained at the visitor center. There are many established campgrounds nearby (see ▲ symbols on map). Most charge a fee and feature designated sites and a maximum length of stay.

## Mono, An Ancient Sea

*"A country of wonderful contrasts, hot deserts bordered by snow-laden mountains, cinders and ashes scattered on glacier-polished pavement, frost and fire working together in the making of beauty."*

John Muir

It is easy to see why Muir was so enthusiastic about the Mono Basin during his first summer in the Sierra. It is an area of extraordinary contrasts. Perennial snowfields and glaciers at 13,000 feet overlook a dry, sagebrush-covered desert below.

The lake itself is a majestic body of water covering about 60 square miles; 13 miles east-west by 8 miles north-south. And it is an ancient lake (over 700,000 years old) – one of the oldest lakes in North America. It has no outlet. Throughout its long existence, salts and minerals have washed into the lake from Eastern Sierran streams. Freshwater evaporating from the lake each year has left the salts behind so that the lake is now about two and a half times as salty and eighty times as alkaline as seawater.

You will notice a soapy or slippery feel to Mono Lake's water. The alkaline water is very cleansing. Mark Twain wrote of Mono : "Its sluggish waters are so strong with alkali that if you only dip the most hopelessly soiled garment into them once or twice, and wring it out, it will be found as clean as if it had been through the ablest of washer woman's hands."

## Tufa

Salty lake water (carbonates) + freshwater springs (calcium) = Tufa (calcium cabonate).

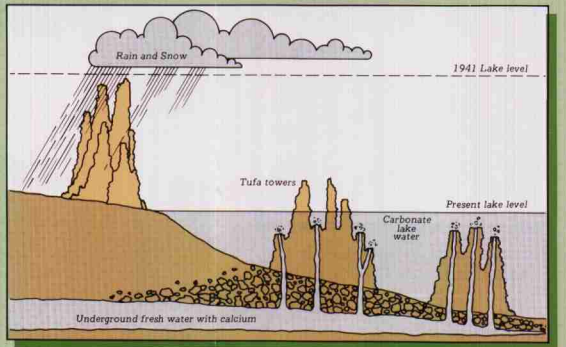
Mono Lake's tufa towers (pronounced "toofah") are spectacular examples of what nature can do with a few basic elements. These unusual spires and knobs are formed when calcium-bearing freshwater springs happen to well up through alkaline lake water, which is rich in carbonates. The calcium and carbonate combine, precipitating out as limestone. Over many years, a tower forms around the mouth of the spring. This tufa-forming reaction happens only in the lake itself. As lake level drops and exposes the tufa towers, they cease to grow.

The towers at South Tufa are estimated to be between 200 and 900 years old. Far older tufa towers, some of them as much as 13,000 years old, can still be found high above the current lake, along Mono's ancient shore.

Tufa is found in other alkaline bodies of water, but the variety and quantity of Mono's towers is unique.

Tufa is also formed as freshwater springs percolate through briny lake-bottom sand. The "sand tufas" are intricate sand tubes and columns exposed as winds strip away their sandy coverings. You can see sand tufa formations near the Navy Beach parking lot.

The best place to visit the tufa towers is at the spectacular South Tufa Area. (see map)



## Please Remember

*Tufa* may not be damaged or collected anywhere in the Mono Basin.

*Vehicles* must stay on designated roads and parking areas. Contact the Scenic Area Visitor Center about snowmobiling areas.

*Campfire permits* are required for all campfires, barbecues and stoves except portable stoves in designated parking lots.

*In order to protect nesting birds,* all visitors are required to remain at least one mile away from Paoha and Negit Islands and the islets between April 1 and August 1 each year.

FOR MORE INFORMATION CONTACT:


**Mono Lake Tufa State Reserve**
**P. O. Box 90**
**Lee Vining CA 93541**
**(760) 647-6331**
**e-mail: monol@telis.org**

or

**Mono Basin National Forest Scenic Area**
**P. O. Box 429**
**Lee Vining, CA 93541**

**Scenic Area Visitor Center (760) 647-3044**
**Lee Vining Ranger Station (760) 647-3000**



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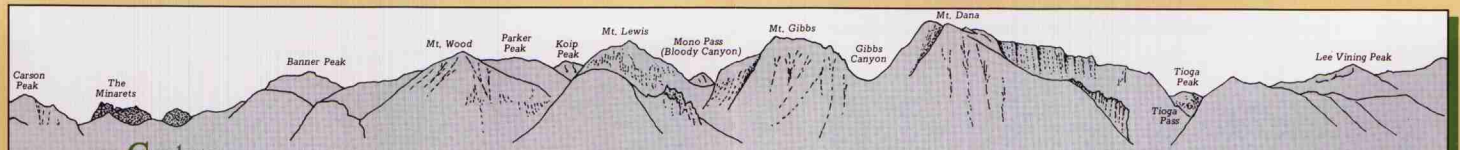
*Swimmers photo by Dave Gaines, islands photo by Jim Stroup, all others by Larry Ford.*


Design, layout & drawings by Ron Warr


## Geology

Mono Lake's modern landscape has been shaped over millions of years by faulting and volcanic activity.

For the last three to four million years the whole basin has been tilting westward and sinking while the Sierra has been rising. This ongoing process has created the majestic contrast of a desert lake bordered by high mountain peaks. As the western floor of the Mono Basin slipped downwards, its southern and northern margins tilted slowly towards its center, forming a bathtub like basin that filled with water to form Mono Lake.

About 12,000 years ago, following the peak of the last great ice advance, the Mono Basin filled and even overflowed for a short time. This Ice Age lake covered 338 square miles and reached a depth of about 900 feet, five times larger than the modern lake.

You can see evidence of Mono's Ice Age glaciers in the morainal embankments at the mouths of Bloody Canyon and Lee Vining Canyon.

The Mono Basin's long history of vulcanism is evident in the hills that mark the north and east boundaries of the basin -- hills that date back some 11 million years. To the south lie the Mono Craters, the youngest mountain range in North America. Panum Crater, the northernmost of these craters, erupted only 600 years ago. Panum is easily reached from Highway 120, three miles east of Highway 395.

Mono's islands are also volcanic. Paoha Island is thought to be only about 200 years old. Hot springs and steam vents in the basin show that volcanic activity is still present.

Black Point on the north shore of Mono Lake is the result of a volcanic eruption that began beneath the lake about 13,000 years ago. At that time lake level was still rising toward its post Ice Age high point, but the lake was already some 400 feet deeper than it is today. As the top of Black Point cooled and contracted, narrow cracks or fissures formed on the summit -- some of them only a few feet wide but as much as fifty feet deep. Some of those fissures can be explored today. Look for tufa that formed in the cracks when the top of Black Point was still under Mono Lake.

## Wildlife

Mono has been called a "dead sea" but it actually abounds with life. Few animals can tolerate Mono's salty, alkaline water, but these few species thrive in astronomical numbers.

The food chain begins with green algae, a microscopic one-celled plant. Algae uses decayed organic matter and sunlight to grow. In the winter, when the algae blooms, the lake may become pea soup green.

Two animals feast on the algae: the brine shrimp, and the brine fly.

Brine fly females can actually walk into the lake in an air bubble and lay their eggs on pieces of rock or tufa. The egg becomes a larva and then a pupa before the adult fly finally emerges. The pupa stage of the brine fly was collected by the local Kuzedika Paiute Indians, and used as a food source and trade item. "Mono" is the Yokuts Indian word for "brine fly".

The half-inch long brine shrimp can be seen in Mono Lake from April through October. At the height of the summer season an estimated four trillion shrimp swim in Mono's waters. As winter approaches, the adult brine shrimp begin to die off, but not before eggs are laid that will overwinter in the lake-bottom mud. The eggs hatch out as the lake water warms in the spring. Mono's shrimp (Artemia monica) are thought to be a unique species that has adapted to Mono's special conditions.

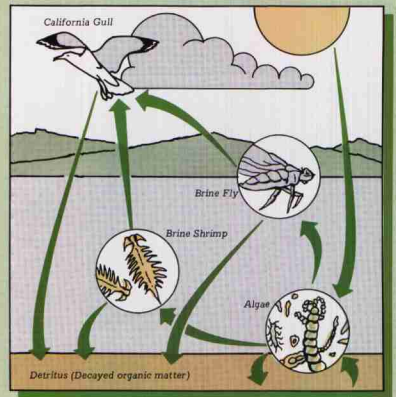
Mono's shrimp and flies provide a plentiful food supply for more than eighty species of migratory birds that visit the lake each spring and summer. Particularly notable bird species include three migrants: eared grebes, Wilson's and red-necked phalaropes, and two nesting species -- California gulls and snowy plovers.

The small, graceful phalaropes are delightful to watch as they pick brine flies off the surface of the lake or snatch them from the air. About 150,000 phalaropes visit Mono Lake in July and August. They winter in warmer South American climates.

Eared grebes visit Mono Lake in astonishing numbers. An estimated 800,000 of them make a spectacular sight during the fall migration from August through October. Grebes can be seen diving for food in the lake, but are never seen on land as their legs are designed for swimming rather than walking.

About 50,000 adult California gulls fly to Mono Lake from the coast each spring to nest where food and island nesting sites are plentiful. Approximately 90% of the California population of this species is born at Mono Lake.

Snowy plovers nest along the windswept alkali flats of Mono Lake's eastern shore. The colony of 400 birds is about 10% of the California population of this species.

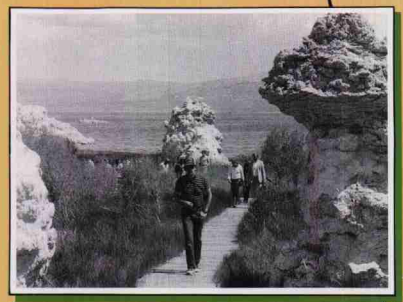



## Environmental Concerns

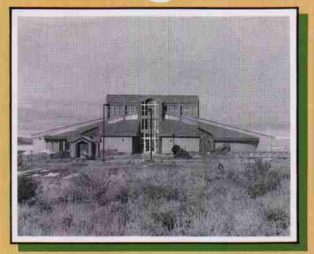
In 1941 the city of Los Angeles began diverting four of the five major streams that feed Mono Lake. Without that water, the lake dropped approximately forty feet and doubled in salinity. Concerns about the lake's ecosystem, and about the effects of wind-blown alkali dust on Mono Basin air quality, as well as the esthetics of a shrinking lake, led citizen groups (the Mono Lake Committee and National Audubon Society) to begin the legal effort to protect Mono Lake.

On September 28, 1994, after 16 years of court battles, research, and formal hearings, the State Water Resources Control Board issued an order to protect Mono Lake and its tributary streams. The order will raise the lake level by 17 feet to an elevation of 6,392 feet above sea level over the next 20 years. All parties involved agreed to accept this plan and implement it in a spirit of cooperation.

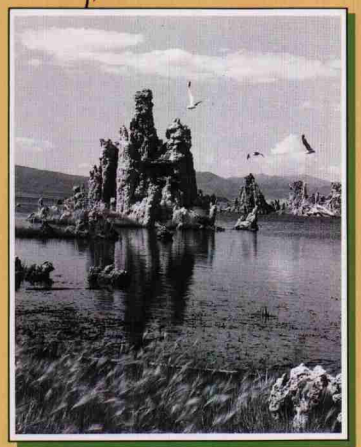
While the lake may be saved on paper, much remains to be done. Stream and waterfowl habitat restoration efforts are underway, with input from Scenic Area and Reserve staff. The question today is not *whether* Mono Lake will be saved, but *how* it will be saved.



Tufa Near Mono Lake County Park

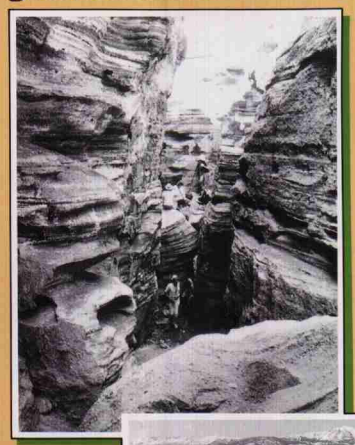


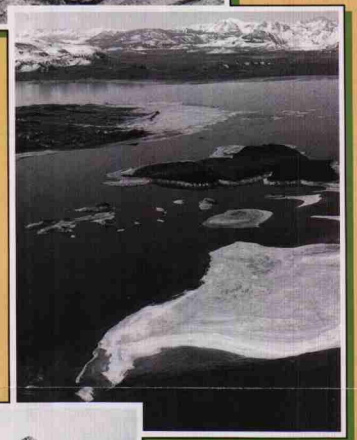
Scenic Area Visitor Center (and Reserve Office)



South Tufa Area

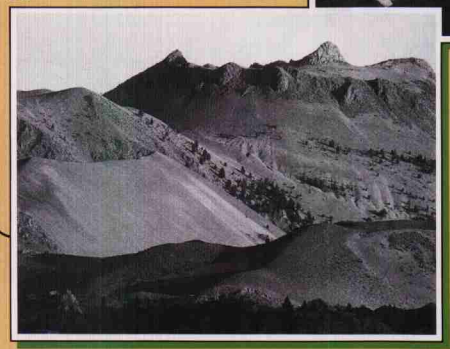
Black Point Fissures





The Islands

Mono Craters



To Bridgeport
To Bodie
To Hawthorne
CLOSED IN WINTER
4WD Road
BOUNDARY
AREA
1941 Shoreline
Sulphur Pond
6417' elevation
167
Wilson Creek
SCENIC
Lundy Lake
Mill Creek
Black Point
County Park
Negit Island
Paoha Island
Warm Springs
Wheelchair Accessible Trail
Old Marina Site
Mono Lake
(At Elevation 6379')
Scenic Area Visitor Center & Reserve Office (handicap accessible)
Lee Vining
(fee site)
South Tufa Area
(fee site)
Navy Beach
Simons Spring
CLOSED IN WINTER
120
Lee Vining Creek
Ellery Lake
Tioga Lake
To Yosemite National Park
Lee Vining Ranger Station
Panum Crater
4WD Road
385
Walker Creek
Walker Lake
Rush Creek
Parker Creek
Parker Lake
Grant Lake
Mono Craters
SCENIC
Mono Mills Site
To Benton
Devil's Punch Bowl
June Lake
Silver Lake
Gull Lake
June Lake
158
To Mammoth Lakes
0 1 2 3 4 5
SCALE IN MILES

- MAJOR TUFA AREAS
- CAMPGROUNDS
- PAVED ROADS
- IMPROVED DIRT ROADS
- 4-WHEEL DRIVE ROADS
- PARKING LOTS
- SCENIC AREA
- RESERVE AREA
- SCENIC AREA RELICTED LANDS
- PRIVATE OR CITY OF L.A. PROPERTY (within scenic area boundary)

## Mono Lake Tufa State Reserve

Mono Lake Tufa State Reserve consists of those state-owned lakebed lands below the elevation of 6,417 feet – Mono Lake's surface elevation in 1914. Since then the diversion of streams by the City of Los Angeles caused the lake to drop approximately forty feet, exposing as much as 17,000 acres. The Reserve was established in 1982 to preserve the spectacular tufa formations and other natural features of Mono Lake.

## Mono Basin National Forest Scenic Area

Mono Basin National Forest Scenic Area was designated by Congress in 1984 to protect the natural, cultural, and scenic resources of the Mono Basin. The Scenic Area encompasses 116,000 acres and contains many diverse and interesting features. The Mono Basin Scenic Area is the first of its kind in the National Forest System.